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Lysogenicity in E. coli K-12. — Lysogenicity or latent virus was accidentally discovered when a sensitive indicator strain (W-518) was found, isolated as a UV mutant for an unrelated character. Mixed culture of W-518 and K-12 or its derivatives resulted in the weak lysis of W-518. The virus obtained from plaques, lambda, is carried by all other K-12 derivatives in a latent form and to which W-518 is uniquely sensitive. Stably lysogenic W-518 strains can be isolated from plaques of free virus or virus liberated by lysogenic cultures. A third phenotype (immune) which is lambda-resistant, non-lysogenic, and non-infectable occurs among the survivors of lysogenic cells treated with UV or of W-518 exposed either to lambda or a second virus, lambda-2 (probably a mutant of lambda). The latter virus was detected following UV treatment of a lysogenic culture, and attacks all classes except certain immune forms. Lambda-2 cannot be demonstrated as a latent virus in the resistant survivors. However, the maintenance of lambda is not affected by resistance to lambda-2. Strains sensitive to lambda are always sensitive to lambda-2; resistance to lambda-2 in these forms is always accompanied by resistance to lambda. Systematic examinations of lysogenics reveals a high incidence of resistance to lambda-2, which might have been accumulated either by a high spontaneous mutation rate of sensitive to resistant bacteria, or by selection of resistant bacteria by virus mutants. The progeny recovered from intercrosses among lysogenic, sensitive, and immune strains (all sensitive to lambda) consists only of parental forms. The two immunes (sensitive and resistant to lambda-2) are non-allelic.

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